

**Appl. No. 10/785,499  
Amendment and/or Response  
Reply to Office action of 6 April 2007**

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**Amendments to the Drawing Figures:**

The attached drawing sheets include proposed changes to FIGs. 1 and 3 and replaces the original sheets including FIGs. 1 and 3.

Attachment: Replacement Sheet(s)

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REMARKS / DISCUSSION OF ISSUES

Claims 1-11 are pending in the application.

The Examiner objects to FIGs. 1 and 3; replacement drawings are attached.

Claims are amended for non-statutory reasons, to correct one or more informalities and to address the Office action objections by correcting a formatting problem that caused the equations to be misplaced within paragraphs. The claims are not narrowed in intended scope and no new matter is added.

The Office action rejects claim 6 under 35 U.S.C. 112, second paragraph. The aforementioned formatting problem caused the equation to be misplaced within the claim. Claim 6 is amended herein to correct this error, and the Examiner's reconsideration of this rejection is respectfully requested. No new matter is added, and the intended scope of the claim is unchanged.

The Office action rejects claim 7 under 35 U.S.C. 112, second paragraph for failing to define the variables referenced in the claims. Claim 7 is amended to include the definitions, and the Examiner's reconsideration of this rejection is respectfully requested. No new matter is added, and the intended scope of the claim is unchanged.

The Office action rejects claim 11 under 35 U.S.C. 102(e) over Alelyunas et al. (USP 6,285,709, hereinafter Alelyunas). The applicant respectfully traverses this rejection.

Claim 11 claims an adaptive filter that adaptively filters a DFE output signal, thereby whitening noise in the DFE output signal.

Alelyunas teaches a decision feedback equalizer DFE 90 that provides a decision output 84 and an error feedback signal err<sub>n</sub> 94. Alelyunas does not teach an adaptive filter that adaptively filters the DFE output signal 84 to whiten noise in the DFE output signal 84.

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Alelyunas does teach filtering the error feedback signal 94, but does not teach that the filter is an adaptive filter, and, one of skill in the art would not interpret an error feedback signal to be a DFE output, per se. In the interest of advancing prosecution in this case, claim 11 is amended to include a conventional definition of a decision feedback equalizer output, thereby excluding an error feedback signal. No new matter is added, and the intended scope of claim 11 is unchanged.

The Office action rejects claims 1, 3, 7, and 8-10 under 35 U.S.C. 103(a) over Applicant's Admitted Prior Art (AAPA) and Barksdale (USPA 2003/0193366). The applicant respectfully traverses this rejection.

Claim 1, upon which claim 2 depends, claims a decision feedback equalizer (DFE) that includes an adaptive filter coupled to the DFE output to adaptively filter the DFE output and whiten an error in the DFE output signal. Claim 8 claims a method of providing a filtered DFE output signal that includes similar limitations.

Claim 3, upon which claims 4-6 depend, claims a device that includes an input that receives an output of a DFE, an adaptive filter that is coupled to the input, and an output coupled to the adaptive filter output for supplying an output signal to a delayed decision feedback sequence estimation (DDFSE) trellis decoder, which output signal is the DFE output signal with a smaller whiter error than the error in the output of the DFE. Claim 7 claims a method for providing a signal to a DDFSE trellis decoder with similar limitation.

Claim 9 claims a decision feedback equalizer (DFE) that includes a forward filter, a subtractor, a slicer, a feedback filter, and an adaptive filter coupled to the output of the subtractor.

Claim 10 claims a television receiver, that includes a decision feedback equalizer (DFE) that includes limitations similar to claim 9, and a delayed decision feedback sequence estimator (DDFSE) having an input coupled to an output of the adaptive filter.

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The applicant acknowledges that adaptive filters exist and that whitening filters exist; the applicant respectfully maintains, however, that adaptively filtering a DFE output signal is not taught in the prior art, and that whitening the error in a DFE output signal is also not taught in the prior art.

The Office action notes that the applicant admits a prior art decision feedback equalizer (DFE), and notes that Barksdale teaches a whitening filter. The Office action then asserts that it would be obvious to one of skill in the art to apply Barksdale's teaching to the admitted prior art "as a known method of signal whitening which would enhance the performance of the trellis decoder" (Office action, page 9, lines 5-6). The applicant respectfully disagrees with this assertion.

The Office action does not provide support to the assertion that whitening the error of a DFE output signal will enhance the performance of a trellis decoder for processing this output signal, absent the applicant's disclosure. More significantly, the Office action does not provide support for the assumption that one of skill in the art would recognize that the error in a DFE output signal might require whitening.

In *KSR Int'l. Co. v. Teleflex, Inc.*, the Supreme Court noted that the analysis supporting a rejection under 35 U.S.C. 103(a) should be made explicit, and that it is "important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements" in the manner claimed:

"Often, it will be necessary ... to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit." *KSR*, slip op. at 14 (emphasis added).

As noted by the applicant, filtering the DFE output signal to whiten the noise in the signal adversely affects the quality of the DFE output signal (page 8, lines 19-21), and the correction of the introduced distortion causes the number of steps in the trellis decoder to grow exponentially (page 9, lines 9-15), or precautions must be taken to limit the amplitude of the filter taps (page 10, lines 7-10), each of which adds

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to the cost and complexity of the design, in addition to the cost of the adaptive filter and training device.

The applicant respectfully maintains that there is no apparent reason for one of skill in the art to adversely affect the quality of any output signal; and, more particularly, there is no apparent reason for one of skill in the art to adversely affect the quality of a DFE output signal by whitening an error in this DFE output signal. Further, because of the adverse effect on the quality of the DFE output signal, the mere combination of the applicant's admitted prior art and Barksdale will generally not be suited for its intended purpose without the additional teachings in the applicant's specification.

Because there is no apparent reason to combine the teachings of Barksdale and the applicant's admitted prior art, and because the combination of Barksdale and the applicant's admitted prior art will introduce distortions to the DFE output signal, the applicant respectfully requests the Examiner's reconsideration of the rejection of claims 1 and 8 under 35 U.S.C. 103(a) over the applicant's admitted prior art and Barksdale.

The Office action rejects claims 2 and 4-5 under 35 U.S.C. 103(a) over the Applicant's Admitted Prior Art, Barksdale, and Dagdeviren (USP 6,118,812). The applicant respectfully traverses this rejection.

Claims 2 and 4-5 are dependent upon claims 1 and 3, respectively. In this rejection, the Office action relies on the combination of AAPA and Barksdale for teaching the elements of claims 1 and 3. As noted above, there is no apparent reason to combine the teachings of Barksdale and the applicant's admitted prior art, and therefore the applicant respectfully requests the Examiner's reconsideration of the rejections of claims 2 and 4-5 under 35 U.S.C. 103(a) that rely upon a combination of the applicant's admitted prior art and Barksdale.

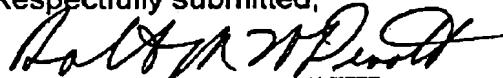
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The Office action rejects claims 1-5 and 7-11 for double patenting over claims of USP 6,724,844, the parent patent to this application. As suggested by the Examiner, a Terminal Disclaimer is filed herewith to obviate the double patenting rejection. Accordingly, withdrawal of the rejections of claims 1-5 and 7-11 is respectfully requested.

In view of the foregoing, the applicant respectfully requests that the Examiner withdraw the rejections of record, allow all the pending claims, and find the application to be in condition for allowance. If any points remain in issue that may best be resolved through a personal or telephonic interview, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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